

CONTRIBUTION TO THE TAXONOMY AND FAUNISTICS OF THE GENUS  
*MEROPLEON* DYAR (LEPIDOPTERA: NOCTUIDAE)

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*Abstract.*—A new species of owlet moth, *Meropleon liniae* (Lepidoptera: Noctuidae) from Kansas, is described and illustrated. *Meropleon liniae* is distinguished from other species of *Meropleon* by forewing color and pattern, shape of the valva, and structure of the aedoeagus. *Meropleon liniae* is most similar morphologically to *M. cinnamicolor* Ferguson. New distribution records for *M. ambifusum* (Newman) and the first record for *M. titan* Todd in Kansas are given.

*Key Words:* new species, new state record, distribution, Konza Prairie, Riley County, Nearctic

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*Meropleon* Dyar, 1924, is a small, morphologically distinct genus endemic to eastern North America. Members of this genus can be recognized using male and female genitalic characters. Males of *Meropleon* can be recognized by a simplified valva with no cucullus, corona or harpe, but with a short rounded and flattened costal process curved inside the genital capsule, and by the aedoeagus with several strong spinelike cornuti located near the base of the vesica or on the carina. Females of *Meropleon* can be recognized by the following combination of genitalic characters: ovipositor short; papillae anales heavily sclerotized, distally dorsoventrally flattened and curved ventrad; gonapophyses with strong, thickened shaft, paddle-shaped, anterior ones very short, several times shorter than posterior; ostium bursae wide; ventral plate of ostium bursae a strongly sclerotized band broadly arched ventrad, broadly and strongly attached at its ends to ends of 8th tergite; ductus bursae weakly sclerotized, its length subequal to length of bursa copulatrix; bursa copulatrix membranous, with no signa,

length of bursa copulatrix subequal to its width; appendix bursae very short, lobelike; the caudal edge of 7th sternite with a rim of short non-deciduous hairs.

Five *Meropleon* species have been described (Ferguson 1982, Poole and Gentili 1996) and one more species is described below. The known larvae feed internally in sedges and large grasses (Ferguson 1982). Species of the genus are not commonly caught using traditional lighting techniques, and are strictly associated with habitats where food plants grow, although in such places they can be numerous. Kansas is on the western edge of the range of this genus. Two species, *M. ambifusum* (Newman, 1948) and *M. diversicolor* (Morrison, 1874), have been recorded from eastern Kansas (Ferguson 1982).

One new species of *Meropleon* and a new Kansas state record were discovered during a survey of owlet moths at the Konza Prairie Biological Station, Riley County, Kansas. I take this opportunity to describe this new species and present new distribution records for species of *Meropleon* in Kansas.

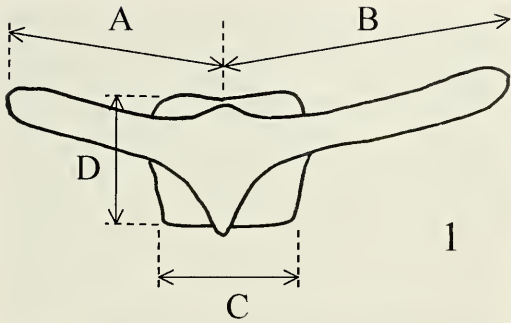


Fig. 1. Measure distances of an individual flagellomere. A, length of short branch; B, length of long branch; C, width of flagellomere; D, length of flagellomere.

#### MATERIALS AND METHODS

The majority of the material used in this work was obtained by night collecting at Konza Prairie Biological Station. Additional data were obtained from specimens in the Snow Entomological Collection at the University of Kansas. Night collecting was conducted several times monthly from the beginning of July to the beginning of November in 2003, and from the end of February to the middle of November in 2004. A white sheet and 175-watt mercury vapor light were used for night collecting. Collected specimens were spread and dried on spreading boards and examined with a Leica MZ 9.5 stereomicroscope with 10× oculars. Individual flagellomeres were measured with an ocular micrometer in a Leica MZ APO stereomicroscope with 10× oculars. Measurements as shown on Fig. 1 were taken viewing the right antenna in ventral view under high power (80×). Some specimens were dissected to study genitalic structures. Genitalia were photographed with the use of a Leica MZ APO stereomicroscope and a Nikon DXM 1200 digital camera. Terminology for genitalic structures follows Hacker (2004), and terminology for wing patterns follows Forbes (1954). Paratypes of *Meropleon cinnamicolor* Ferguson, 1982, were examined.

Abbreviations for institutions mentioned in the text are as follows: KPBS = Konza

Prairie Biological Station, Riley County, Kansas; KSEM = Snow Entomological Collection, University of Kansas, Lawrence; KSU = Kansas State University, Manhattan; KSU-MEPAR = Kansas State University Museum of Entomological Prairie Arthropod Research; USNM = National Museum of Natural History, Smithsonian Institution, Washington, D.C.

The abbreviations AL, 20C, and THP that occur on some collecting data mentioned in the text designate certain watersheds at KPBS.

#### *Meropleon linae* Metlevski, new species (Figs. 2, 4–11)

Diagnosis.—The structure of the male and female genitalia clearly shows that this species belongs to the genus *Meropleon*. *Meropleon linae* can be differentiated from all other species of *Meropleon* using structures of the male genitalia and the color and pattern of the wings. In the male genitalia of *M. linae*, the ventral margin of the valva is noticeably curved at the distal end of the sacculus and the aedeagus has 5–7 thick, heavily sclerotized spinelike cornuti (one near the base of the vesica and 4–6 on the ventral plate of the carina). In all other species of *Meropleon*, the ventral margin of the valva is not noticeably curved and the aedeagus has 2–4 cornuti (no more than one cornutus on the carina). The following features can be used to differentiate *Meropleon linae* from the most similar *M. cinnamicolor* (Fig. 3): in *M. linae* the ground color of forewings is duskier than in *M. cinnamicolor*; in *M. linae*, the forewings have no whitish scales, while in *M. cinnamicolor* there is a whitish area in the proximal part of forewing between veins R and Cu; the forewing pattern is much more reduced (its elements are almost completely absent) in *M. linae* than in *M. cinnamicolor*; in *M. linae* the hindwings are whitish, compared to light brown in *M. cinnamicolor*. *Meropleon linae* can be easily differentiated from *M. ambifuscum*, *M. diversicolor*, *M. titan* Todd, 1958, and *M. cosmion* Dyar, 1924, using the





Figs. 2-5. *Meropleon linae* and *M. cinnamicolor*. 2, Paratype of *M. linae*. 3, *M. cinnamicolor*, South Carolina. 4-5, Holotype of *M. linae*. 4, Wing pattern. 5, Antenna.

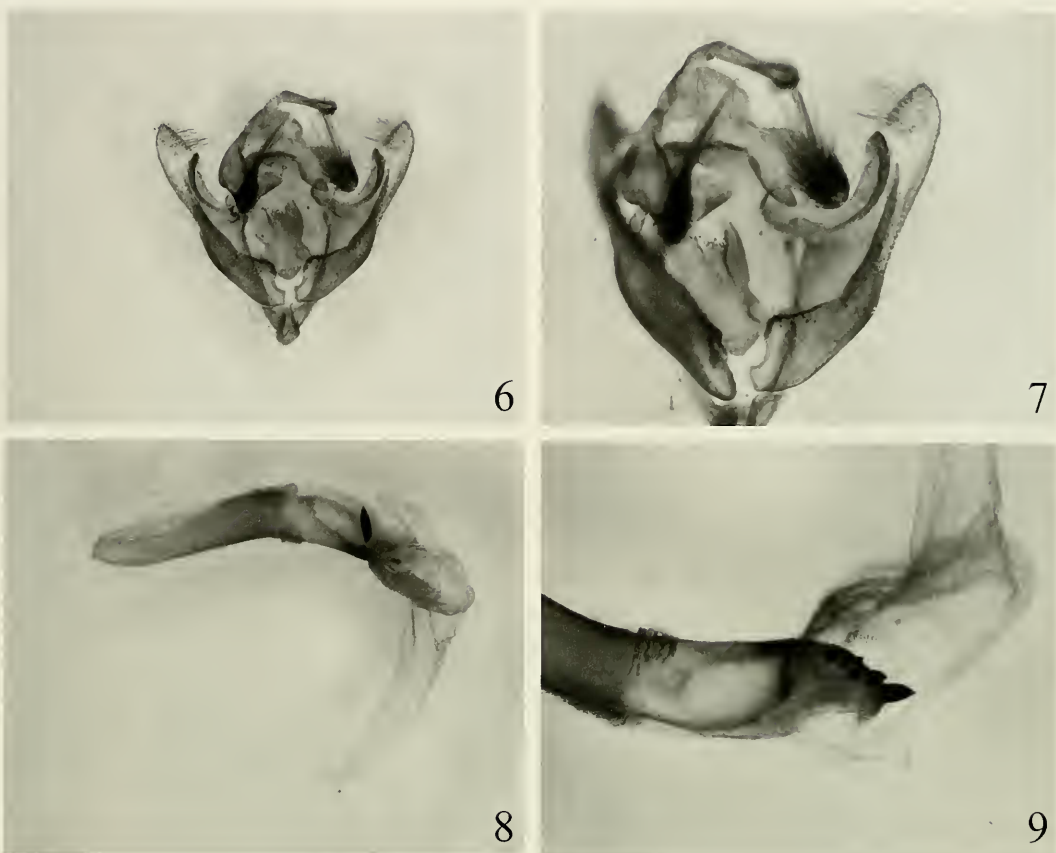
forewing pattern. In *M. linae* the forewings are unicolorous with an almost completely reduced wing pattern, while in *M. ambifuscum*, *M. diversicolor*, and *M. titan* the forewings have the proximal half with dark brown black elements and a much lighter distal half, as well as well developed elements of the wing pattern. In *M. linae* the forewings have no white elements, while in *M. cosmion* the white elements are well developed and contrast strongly with the forewing's ground color.

**Description.**—Male: *Head*: Light reddish brown, some brownish-gray hairs above eyes; vertex and upper part of front with tuft of flattened hairs, longest on vertex and shorter toward front; labial palpus gray, with longitudinal band of dark gray scales; antenna bipectinate, shaft covered with whitish scales, 61 flagellomeres, ratio length of short branch/length of long

branch/thickness of flagellomere/length of flagellomere equal: 15th flagellomere—20/29/13/13, 35th flagellomere—19/22/11/11.

*Thorax*: Light reddish brown dorsally, covered with long flattened and slightly spatulate hairs; pale gray ventrally except brownish-gray area between head and forelegs, covered with long simple hairs; foreleg brownish gray, other legs pale gray.

*Forewing*: Length 14-17 mm; reddish brown except for grayish shadow not contrasting strongly with remainder of wing in postmedial area between inner margin and vein Cu2; markings almost completely absent, postmedial line and reniform spot slightly lighter than ground color but hardly visible; veins A, Cu, and R and branches of veins Cu, R, and M with many brownish-gray scales, appearing dark gray; terminal line grayish brown; fringe slightly darker than ground color; underside gray, small



Figs. 6–9. Male genitalia of *Meropleon lineae* (holotype). 6, Genital capsula (posterior). 7, Right valva. 8, Aedeagus with vesica everted left lateral view). 9, Aedeagus with vesica and ventral plate of carina everted (right ventrolateral view).

discal spot and area between vein A and inner margin whitish; fringe gray.

*Hindwing*: Whitish with scattered gray scales in outer part; vein R and branches of veins R and M gray; discal spot light gray, barely visible; fringe whitish, light pinkish brown at apex; underside whitish, small dark gray discal spot, many scattered dark gray scales; area between vein Cu and inner margin with few dark gray scales; fringes white, gray at apex.

*Abdomen*: Light gray; first segment with dorsal tuft of long slightly spatulate hairs.

*Male genitalia* (Figs. 6–9): Uncus apically expanded and flattened dorsoventrally; sclerotized costa separates from dorsal edge of valva approximately at middle, terminated as a rounded flattened process

turned inside the genital capsula; sacculus flattened dorsally, with setose area on dorsal surface; clasper a longitudinal, almost straight, narrow, sclerotized bar extending from distal end of sacculus to ventral base of costal process, along and very close to ventral margin of valva; ventral margin of valva noticeably curved at distal end of sacculus, slightly concave medially, slightly sclerotized distally from sacculus; ventral sclerotization of valva diverging from clasper at about one-third of clasper's length before distal end of clasper; distal portion of valva from costal process to apex slightly sclerotized and setose apically; apex of valva rounded; distal portion of valva equal to half length of valva's dorsal edge; saccus somewhat produced, not ta-



pering to a point, abruptly narrowed in distal half; aedeagus tubular, slightly arcuate, extended moderately at distal end, with well-developed and strongly sclerotized ventral plate of carina; ventral plate of carina with 4–6 thick, heavily sclerotized spines, arranged by size, largest located on rounded apex of ventral plate of carina, and remaining decreasing in size toward base of ventral plate (Fig. 9); everted vesica finely granulose, broad, short, angled slightly ventrolaterally, then inflected ventrad, narrowed after inflection and prolonged by ductus ejaculatorius, with one short, rounded, broad at base diverticulum located before inflection; vesica with one thick, long, spinelike cornutus located near base of vesica, ventrolaterally on right side and pointed dorso-cephalad (Fig. 8).

Female: Coloration and markings similar to male; antenna filiform.

*Female genitalia* (Figs. 10–11): Ovipositor short; papilla analis strong, heavily sclerotized, full length flattened ventrally, and in distal third dorsally, flat distal third curved ventrad, apex rounded, densely setose with short setae; apophysis posterioris strong, well sclerotized, paddle-shaped, little longer than papilla analis; eighth segment strongly sclerotized, narrow, curved ventrad and cephalad, its ends broadly and strongly attached to ends of the ventral plate of ostium bursae; apophysis anterioris very short and wide; ostium bursae wide, ventral plate as strongly sclerotized narrow band, broadly arched ventrally, broadened at ends, dorsal plate moderately sclerotized, its caudal edge with small triangular shear medially; ductus bursae gelatinous-sclerotized, dorsoventrally flattened in its caudal third, wide at ostium bursae, narrowed cephalad, abruptly asymmetrically expanded before meeting bursa copulatrix, with a mesal lobe on dorsal side; bursa copulatrix membranous, wide caudally, narrowed anteriorly, as long as wide in its caudal part; appendix bursae very short, as a small lobe on the left side of caudal part of the bursa copulatrix; ductus seminalis extending from

the base of appendix bursae, on its right side close to the base of ductus bursae.

Types.—Holotype: ♂, “KANSAS, Riley County, KPBS, Nature trail area, 39°06.28'N, 96°35.75'W, 22.X.2003, J. Metlevski,” “KSU-MEPAR Genitalia Prep. by J. Metlevski No 161.” Deposited in KSU-MEPAR. Paratypes: 1 ♂, same as holotype, deposited in USNM; 2 ♂, “KANSAS, Riley County, KPBS, AL, 39°06.12'N, 96°35.70'W, 3.X.2004, J. Metlevski”; 1 ♂, “KANSAS, Riley County, KPBS, 39°06.13'N, 96°36.35'W, 19.X.2004, J. Metlevski”; 1 ♂, same label data as above except “21.X.2004,” “KSU-MEPAR Genitalia Prep. By J. Metlevski No 231,” deposited in KSU-MEPAR; 1 ♂, same label data as above except “24.X.2004,” “KSU-MEPAR Genitalia Prep. By J. Metlevski No 232,” deposited in KSU-MEPAR; 1 ♀, “KANSAS, Riley County, KPBS, Main headquarters, 3.X.2004, J. Metlevski,” “KSU-MEPAR Genitalia Prep. By J. Metlevski No 233,” deposited in KSU-MEPAR.

Biology.—Unknown.

Discussion.—The habitat where specimens of *M. lineae* were caught is a hilly tall-grass prairie with wooded areas along a creek and on some slopes. Other species of *Meropleon* fly in the autumn and are univoltine, and the collection data suggest that *M. lineae* is the same. *Meropleon lineae* is most similar morphologically to *M. cinnamicolor*. Both species are characterized by broadly bipectinate male antennae, forewings almost unicolorous reddish brown with wing pattern very much reduced, and abdominal tuft on the first abdominal sternum only (in other species of *Meropleon* the tuft is present also on segments 3 and 4). *Meropleon lineae* and *M. cinnamicolor* also share the following characters of the male genitalia: an apically expanded and flattened uncus; an extended distal part of the valva, which is at least half as long as length of the valva's dorsal edge (compared to less than half in other species of *Meropleon*); and ventral sclerotization of the val-



Figs. 10–12. *Meropleon linae* and *M. titan*. 10–11. Female genitalia of *M. linae*. 10. Ventral view. 11. Right lateral view. 12, *M. titan*. Kansas, Riley County, KPBS.

va diverging from the clasper well before its distal end. From the point of morphological similarity of *M. cinnamicolor* and *M. linae* the known distribution of both species is a challenge. *Meropleon cinnamicolor* is known only from several areas in the coastal marshes of South Carolina and North Carolina and *M. linae* is found on the opposite side of the range of the genus.

Etymology.—*Meropleon linae* is named in honor of my beloved wife Lina.

Specimens of *M. cinnamicolor* examined.—All are in USNM. Paratypes: 1 ♂, “Wedge Plantation, South Santee River, Charleston County, S[outh] C[arolina], 22 November 1967, Douglas C. Ferguson,” “USNM Genitalia Slide by DCF No 56474”; 1 ♀, same label data as above ex-

cept "Nov.21.1967"; 1 ♀, "McClellanville, South Carolina 29458, 31 Oct. 1967, Light, R. B. Dominick, Charles R. Edwards"; 1 ♀, "Wedge Plantation, 7 mi. NE McClellanville, Charleston County, S[outh] Car[olina], Nov.1.1967," "Coll. by C. R. Edwards," "USNM Genitalia Slide by DCF No 56488." Other specimens: 1 ♂, "Wedge Plantation, 7 mi. NE McClellanville, Charleston County, S[outh] Car[olina], Oct.1.1967," "Coll. by C. R. Edwards," "USNM Genitalia Slide by DCF No 56473"; 1 ♂, South Carolina, Wedge Plantation, McClellanville, 28 November 1970, D. C. Ferguson."

*Meropleon ambifuscum* (Newman)

The distributional range of this species includes Connecticut (Ferguson 1982), Maryland (Metzler et al., in press), Ohio (Rings et al. 1992), Michigan (Ferguson 1982), Wisconsin (Metzler et al., in press), Indiana (Metzler et al. in press), Illinois (Metzler et al., in press), Iowa (Metzler et al., in press), Missouri (Ferguson 1982), Nebraska, (Metzler et al. in press) Kansas (Ferguson 1982), Kentucky (Metzler et al. in press), Tennessee (Metzler et al., in press), Arkansas (Ferguson 1982), South Carolina (Ferguson 1982), Georgia (Metzler et al., in press), Mississippi (Ferguson 1982), and Louisiana (Metzler et al., in press). *Meropleon ambifuscum* was known in Kansas only from Douglas County (Ferguson 1982) in the easternmost part of the state. New data on the distribution of *M. ambifuscum* in Kansas are given below. One specimen, labeled "Topeka, Ks. Popenoe.," was found in KSEM, and nineteen specimens were collected at KPBS: 1 ♂, "Riley County, KPBS, 20C, 3.VIII.2003, J. Metlevski," "KSU-MEPAR Genitalia Prep. by J. Metlevski No 157" (KSU-MEPAR); 2 ♂, "KPBS, Nature trail area, 39°06.28'N, 96°35.75'W, 30.IX.2003, J. Metlevski," "KSU-MEPAR Genitalia Prep. by J. Metlevski No 156," "KSU-MEPAR Genitalia Prep. by J. Metlevski No 158" (KSU-MEPAR); 6 ♂, same label data as above except

"19.X.2003," "KSU-MEPAR Genitalia Prep. By J. Metlevski No 159," "KSU-MEPAR Genitalia Prep. By J. Metlevski No 160" (KSU-MEPAR); 8 ♂, "Riley County, KPBS, AL, 39°06.20'N, 96°35.73'W, 15.IX.2004, J. Metlevski"; 2 ♂, "Riley County, KPBS, THP, 39°06.87'N, 96°33.80'W, 20.IX.2004, J. Metlevski."

*Meropleon titan* Todd  
(Fig. 12)

This species is known from New Jersey (NatureServe 2004), Maryland (Stevenson 1989, J. D. Glaser in litt.), Virginia (NatureServe 2004), North Carolina (NatureServe 2004), South Carolina (Ferguson 1982), Georgia (J. K. Adams in litt.), Mississippi (Ferguson 1982), Missouri (Ferguson 1982), and north central Texas (Blanchard, 1973); it has not been reported from Kansas. Two males were collected at KPBS in October 2003. Both specimens have the following label data: KANSAS, Riley County, KPBS, Nature trail area, 39°06.28'N, 96°35.75'W, 22.X.2003, J. Metlevski (KSU-MEPAR). Genitalia preparation for one of them was made: KSU-MEPAR Genitalia Prep. by J. Metlevski No 162. Twelve more specimens were collected at KPBS in 2004: 1 ♂ and 1 ♀, "KANSAS, Riley County, KPBS, AL, 39°06.12'N, 96°35.70'W, 26.IX.2004, J. Metlevski"; 9 ♂ and 1 ♀, same label data as above except "3.X.2004."

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